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COMPLETE SPECIFICATION

1 SHEET

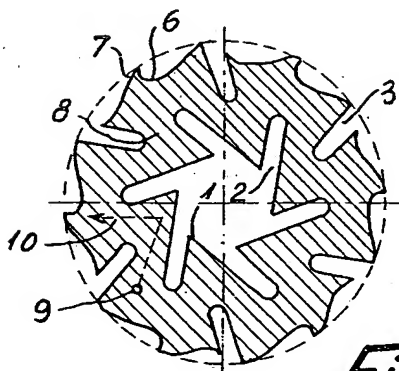
This drawing is a reproduction of  
the Original on a reduced scale

Fig. 1

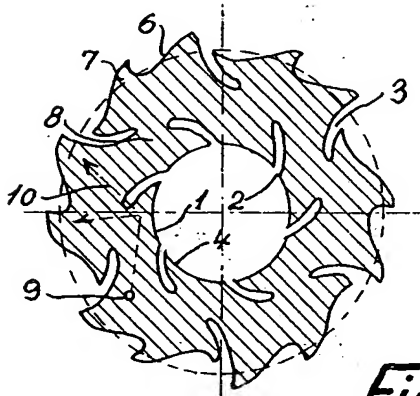


Fig. 2

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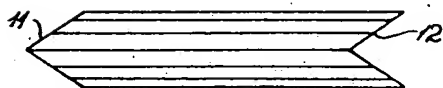


Fig. 3

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# PATENT SPECIFICATION

DRAWINGS ATTACHED

L006.010

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No. 49179/62.

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Index at acceptance:—F2 H16

Int. Cl.:—F 06 b

## COMPLETE SPECIFICATION

### Wall Plug

I, CARL CHRISTIAN KAYSING, a Danish subject, of 31, Søvej, Holte, Denmark, do hereby declare the invention for which I pray that a patent may be granted to me, to be particularly described in and by the following statement:—

This invention relates to a wall plug comprising an essentially cylindrical body of deformable material, the body having an essentially cylindrical axial hole, and longitudinal outer and inner grooves extending into the material of the body respectively from the outer surface of the body and the periphery of the hole.

Such plugs serve to secure a screw in an aperture in a body of hard material e.g. a wall. In use, the plug is introduced into the aperture, and the screw then is driven into the hole in the plug, so that the plug is expanded radially outwardly against the wall of the aperture and is also caused to grip the screw, the material of the body flowing under the influence of the compressional forces to which it is subjected. The flow of the material is enabled by the presence of the grooves, into which the material can escape as it flows.

Such plugs have the disadvantage that as the screw is being driven in it tends to enter one of the inner grooves and thus to assume an eccentric position.

According to the invention there is provided a wall plug of deformable material comprising an essentially cylindrical body having an essentially cylindrical axial hole for receiving a screw, the body having longitudinal outer and inner grooves extending into the material of the body respectively from the outer surface of the body and the periphery of the hole, the inner grooves defining lugs which are triangular as seen in cross-section through the body and have acute angled apices directed inwardly of the body with one side of each lug extending essentially tangentially of said periphery, the outer grooves being directed towards the apices of the lugs.

For a better understanding of the invention reference will now be made to the accompanying drawing in which:—

FIGURE 1 is an enlarged cross-sectional view of a wall plug before use;

FIGURE 2 is a similar view to that of Figure 1 but showing the plug during use; and

FIGURE 3 is a side elevational view of the plug drawn to a smaller scale than Figures 1 and 2.

The wall plug comprises a body of deformable material, e.g. synthetic resin, having an essentially cylindrical hole with a periphery 1, a series of longitudinal inner grooves 2 extending from the periphery 1 into the material of the body. As seen in Figure 1 the grooves 2 define triangular lugs 8 having acute angled apices directed inwardly of the body, one side of each lug extending tangentially of the periphery 1. A series of longitudinal outer grooves 3 extend into the material of the body and are directed towards the apices of the lugs 8 defined by the grooves 2, the grooves 2 and 3 being equal in number. The body has an undulating profile as seen in cross-section defining sharp wave crests 7 and wave troughs 6. The body has at one end thereof a wedge-shaped nose 11 tapered axially outwardly of the body, and at its other end a grooved tail 12 shaped complementarily to the nose 11. The tapered surfaces of the wedge-shaped nose 11 serve to guide the plug into an aperture in a wall (not shown) and the hole opens into the other end of the plug to receive a screw (not shown) to be driven into the plug, the screw being guided by the tail 12. Assuming that the screw has a right hand thread, point 9 indicates the axis of rotation of one of the lugs 8 as the screw is being driven into the plug, 10 indicating the axes of the main directions of pressure at this stage.

The two grooves on either side of the broken line extending from the point 9 may

be regarded as a matching pair of grooves and the remaining grooves may be regarded as being similarly paired.

5 All cavities between the screw and the aperture in which the plug is to be fixed should be completely filled with the material of the body, when the screw has been driven home.

10 When the screw is being driven in, the screw being right hand threaded tends to move the material of the lugs in a sense of rotation such that the lugs overlap one another. The tendency of the screw to enter one of the inner grooves is therefore reduced since the grooves tend to close upon compression of the material of the body. As the screw is being driven in, 15 the plug is deformed in such a way that there is sufficient friction between the plug and the wall of the aperture to prevent rotation of the plug relative to the wall of the aperture, since each crest 7 is initially pressed against the wall of the aperture. This is of particular advantage where the aperture wall consists for example of plaster or mortar, which may be 20 loosened by the rotation of the plug.

25 The number of grooves that should be provided depends upon the size of the plug. The smaller the plug the smaller is the number of grooves required.

30 The plug may be cut from a strip of the elastically deformable material by an angled blade which simultaneously forms the grooved tail 12 of the one plug and the wedge-shaped nose 11 of the next following plug.

#### WHAT I CLAIM IS:—

1. A wall plug of deformable material comprising an essentially cylindrical body having an essentially cylindrical axial hole for receiving a screw, the body having longitudinal outer and inner grooves extending into the material of the body respectively from the outer surface of the body and the periphery of the hole, the inner grooves defining lugs which are triangular as seen in cross-section through the body and have acute angled apices directed inwardly of the body with one side of each lug extending essentially tangentially of said periphery, the outer grooves being directed towards the apices of the lugs. 35 40 45

2. A wall plug as claimed in claim 1, in which one end of the body is tapered axially outwardly of the body for guiding the body into an aperture to be plugged, the inner grooves being so directed that when a screw having a right hand thread is driven into the hole from the other end of the body towards the tapered end of the body, the lugs are caused to rotate so as to prevent the screw from entering the inner grooves. 50 55

3. A wall plug substantially as hereinbefore described with reference to the accompanying drawings. 60

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